

IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently Amended) A method of determining a flow rate of fluid flowing within a pipe, comprising:
providing a pipe, at least a portion of the pipe having a larger inner diameter than a nominal inner diameter of the pipe, wherein the pipe diverges from the nominal inner diameter of the pipe to the larger inner diameter of the pipe in the direction of fluid flow;
measuring a differential pressure between at least two locations along the pipe using an optical sensor coupled to the pipe, at least one location positioned in the portion having an inner diameter greater than the nominal inner diameter of the pipe;
and
determining a flow rate for the fluid based on the measured differential pressure.
2. (Original) The method of claim 1, wherein determining a flow rate comprises calculating a flow rate from the measured differential pressure and a density of the fluid.
3. (Original) The method of claim 2, wherein the density of the fluid is measured using a method including either sampling the fluid or measuring the density via a density meter coupled to the pipe.
4. (Original) The method of claim 1, wherein the at least two locations comprise the portion of the pipe having the larger inner diameter and the portion of the pipe having the nominal inner diameter of the pipe.
5. (Original) The method of claim 1, wherein the differential pressure is measured using a differential pressure sensor disposed on the pipe, the differential pressure sensor having a differential pressure resolution of 0.001 psid.
6. (Canceled)

7. (Original) The method of claim 1, wherein the inner diameter of the portion of the pipe having the larger inner diameter is approximately 0.25 inches greater than the inner diameter of the portion of the pipe having the nominal inner diameter of the pipe.

8. (Original) The method of claim 1, wherein the pipe diverges from the nominal inner diameter of the pipe to the larger inner diameter of the pipe and back to the nominal inner diameter of the pipe in the direction of fluid flow.

9-27. (Canceled)

28. (Currently Amended) A flow meter for use in measuring fluid flow within a pipe downhole wellbore, comprising:

first and second portions, each having substantially the same inner diameter; and
a middle portion, an inner diameter of the middle portion diverging outward
~~toward the wellbore~~ from the first and second portions; and
one or more fiber optic sensors disposed about the flow meter to measure a
difference in fluid pressure between the middle portion and the first or second portion;
~~wherein a difference in fluid pressure is measurable between the middle portion~~
~~and the first or second portion.~~

29. (Original) The flow meter of claim 28, wherein the fluid pressure is measurable with a differential pressure sensor having a minimum differential pressure resolution of approximately 0.001 psid.

30. (Canceled)

31. (Original) The flow meter of claim 28, wherein the inner diameter of the middle portion is approximately 0.25 inches greater than the inner diameter of the first or second portion.